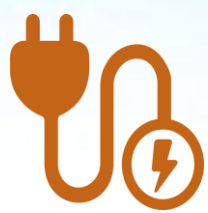


# 2018 POWER DEMAND AND SUPPLY HIGHLIGHTS



**Peak Demand**  
14,782 MW



**Capacity**  
Installed - 23,815 MW  
Dependable - 21,241 MW  
Available - 16,601 MW

**Electricity Sales and Consumption**  
99,765 GWh



**Newly Operational Installed Capacity**  
934 MW



**Gross Generation**  
99,765 GWh



**Power Project Capacity**  
Committed - 6,329 MW  
Indicative - 33,199 MW

## DEMAND

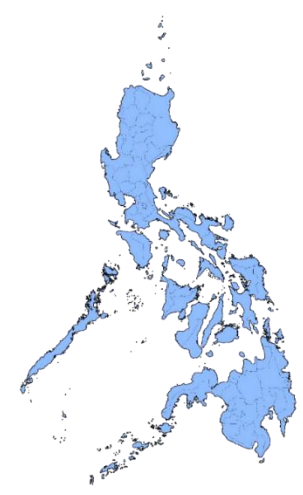
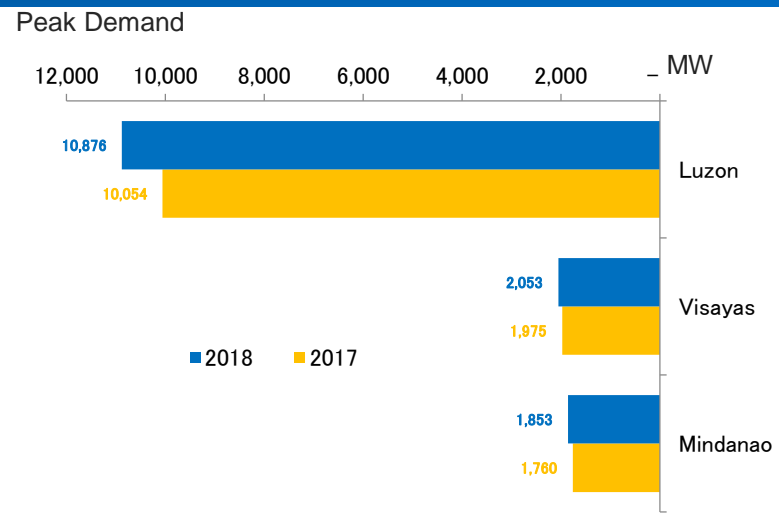


Figure 1. 2017 vs. 2018 Peak Demand per Grid (in MW)

The country's total peak demand<sup>1</sup> in 2018 was recorded at 14,782 MW, which is 993 MW or 7.2% higher than the 13,789 MW in 2017. The Luzon grid contributed 10,876 MW or 74% of the total demand while Visayas and Mindanao has a share of 14%

<sup>1</sup> Total non-coincidental peak demand of Luzon, Visayas and Mindanao grids

(2,053 MW) and 13% (1,853 MW), respectively. Among the three grids, Luzon grid showed the highest increase of 822 MW or 8.2% from 2017 peak demand of 10,054 MW while Visayas and Mindanao grew by 3.9% and 5.3%, respectively.

## ELECTRICITY SALES AND CONSUMPTION

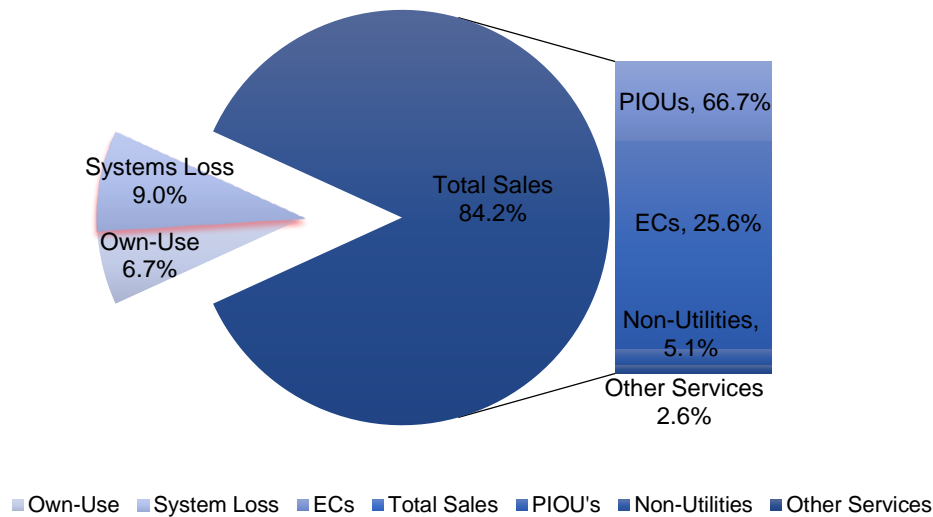
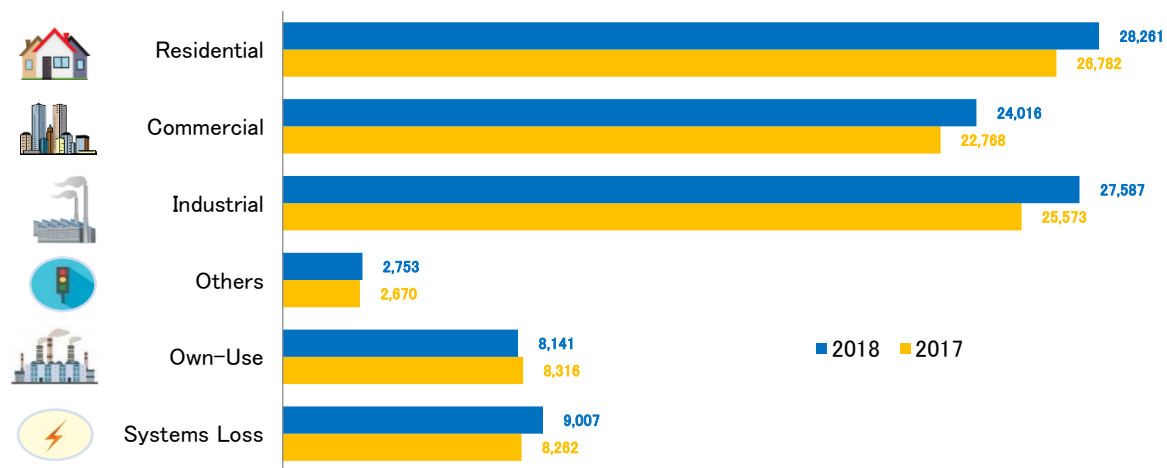


Figure 2. 2018 Electricity Sales and Consumption by Sector, Philippines\*



NOTE: \*Includes Off-Grid Sales  
Numbers may not sum up to total due to rounding off.

Figure 3. 2017 vs. 2018 Electricity Sales and Consumption by Sector, Philippines (in GWh)

In spite of the slowdown in the growth of the Philippine economy in 2018 to 6.2% compared to 6.7% in 2017 and below the government’s downward revised target which ranges from 6.5% to 6.9% for 2018, the total electricity sales and consumption all over the country still posted a notable figure of 99,765 GWh in 2018 from 94,370 GWh in 2017, equivalent to 5.7% growth from the previous year. Out of these total sales and consumption, 56,036 GWh or 56.2% was contributed by Private Investor Owned Utilities (PIOU’s), while 21,486 GWh or 21.5% was from the Electric

Cooperatives' contributions. Non-utilities and Other Services were 4,318 GWh (4.33%) and 2,203 GWh (2.21%), respectively. Total sales accounted to 84,043 GWh, corresponding to 84.2% share to total consumption.

The electricity sales established a solid performance, grew significantly by 6.2% in the year of earth dog, from the previous year's 4.9%. "Own-use" of power plants and distribution utilities dropped further by 175 GWh (-2.1%) from 8,316 GWh in the previous year to 8,141 GWh in 2018. It is noted that "Losses" from generator, transmission and distribution has been on the upward trend since 2016, accounted for 9,007 GWh or 9.0% as shown in Figure 2.

**Table 1. 2018 Electricity Sales & Consumption of Distribution Utilities, by Grid (in GWh)**

TYPE OF DISTRIBUTION UTILITIES	LUZON	VISAYAS	MINDANAO	PHILIPPINES
<b>Private Investors Owned Utilities (PIOU's)</b>				
Residential	14,752	1,269	1,222	17,243
Commercial	18,466	620	599	19,684
Industrial	14,064	2,579	2,087	18,729
Others	193	103	83	379
<b>Total Sales</b>	<b>47,475</b>	<b>4,571</b>	<b>3,990</b>	<b>56,036</b>
Own-Use	65	5	5	75
System Loss	2,838	340	284	3,462
<b>Total</b>	<b>50,378</b>	<b>4,916</b>	<b>4,279</b>	<b>59,573</b>
<b>Electric Cooperatives (EC'S)</b>				
Residential	5,805	2,595	2,618	11,017
Commercial	2,225	1,085	1,022	4,332
Industrial	1,899	864	1,877	4,640
Others	660	425	412	1,497
<b>Total Sales</b>	<b>10,589</b>	<b>4,969</b>	<b>5,928</b>	<b>21,486</b>
Own-Use	20	9	15	44
System Loss	1,371	567	913	2,851
<b>Total</b>	<b>11,980</b>	<b>5,544</b>	<b>6,856</b>	<b>24,380</b>
<b>Non-Utilities/Directly Connected</b>	<b>3,477</b>	<b>547</b>	<b>294</b>	<b>4,318</b>
<b>Other Services</b>	<b>1,426</b>	<b>745</b>	<b>31</b>	<b>2,203</b>
<b>Plant Station Used</b>	<b>4,157</b>	<b>1,471</b>	<b>968</b>	<b>6,596</b>
<b>Transmission Losses</b>	<b>2,084</b>	<b>268</b>	<b>341</b>	<b>2,694</b>
<b>Total Electricity Sales &amp; Consumption</b>	<b>73,503</b>	<b>13,492</b>	<b>12,770</b>	<b>99,765</b>

Philippine electricity sales and consumption continued to manifest resiliency in 2018 despite of the steep rise in inflation from 2.9 % in 2017 to 5.2% as of November in 2018, the country's electricity sales and consumption moderately eased to 5.7% in 2018 from 3.9% in 2017, buoyed by the robust growth in the industry sector from

slower growth of 6.0% in 2017 against 7.9% in 2018, the industry sector contributed 27.1% in the 2018 total consumption driven by the increased in the construction activity, as the Administration pursues the aggressive Build-Build-Build Program. Electricity sales in residential sector expanded drastically posting a remarkable growth of 5.5% in 2018 from 4.5% in 2017. The increase in electricity sales from the residential customers can be traced to the substantial utilization of cooling system due to higher temperatures.

Commercial consumption increased at markedly lower rate from the resilient growth performance of 5.5% in 2018 to a modest growth of 4.6% in 2017.

“Others” which refer to public buildings, street lights, irrigation, agriculture and “others not elsewhere classified” continued to post a growth of 3.1% from 2,670 GWh in 2017 to 2,753 GWh in 2018.

Total system loss of the Distribution Utilities accounted to 9,007 GWh or 9.0%, while the utilities’ own-use for office and station use of the power plants declined to 2.1% from 8,316 GWh in 2017 to 8,141 GWh in 2018.

## SUPPLY

### INSTALLED AND DEPENDABLE CAPACITY

**Table 2. 2018 Total Installed and Dependable Capacity per Technology, Philippines (in MW)**

Fuel Type	Installed		Dependable	
	2017	2018	2017	2018
<b>Coal</b>	<b>8,049</b>	<b>8,844</b>	<b>7,674</b>	<b>8,368</b>
<b>Oil Based</b>	<b>4,154</b>	<b>4,292</b>	<b>3,287</b>	<b>2,995</b>
<b>Natural Gas</b>	<b>3,447</b>	<b>3,453</b>	<b>3,291</b>	<b>3,286</b>
<b>Renewable Energy</b>	<b>7,080</b>	<b>7,227</b>	<b>6,263</b>	<b>6,592</b>
<i>Geothermal</i>	1,916	1,944	1,752	1,770
<i>Hydro</i>	3,627	3,701	3,268	3,473
<i>Biomass</i>	224	258	160	182
<i>Solar</i>	886	896	700	740
<i>Wind</i>	427	427	383	427
<b>TOTAL</b>	<b>22,730</b>	<b>23,815</b>	<b>20,515</b>	<b>21,241</b>

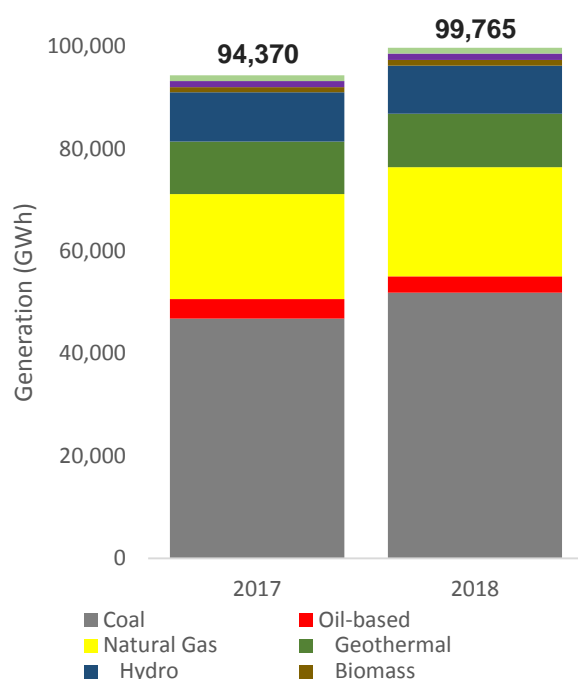


**Table 3. 2018 Summary of Newly Operational Capacities per Technology, Philippines (in MW)**

Fuel Type	Installed		Dependable	
	2017	2018	2017	2018
<b>Coal</b>	<b>630</b>	<b>720</b>	<b>594</b>	<b>690</b>
<b>Oil-Based</b>	<b>77</b>	<b>87</b>	<b>67</b>	<b>83</b>
<b>Natural Gas</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Renewable Energy</b>	<b>128</b>	<b>126</b>	<b>104</b>	<b>122</b>
<i>Geothermal</i>	0	12	0	12
<i>Hydro</i>	1	80	1	80
<i>Biomass</i>	0	34	0	30
<i>Solar</i>	127	0	103	0
<i>Wind</i>	0	0	0	0
<b>TOTAL</b>	<b>835</b>	<b>934</b>	<b>765</b>	<b>894</b>

The total power supply, in terms of installed capacity, grew by 4.8% from 21,730 MW in 2017 to 23,815 MW in 2018. As shown in table 1, a total of 933.6 MW new capacities were added to the country's supply in 2018 which include coal-fired (720 MW), oil-based (87.3 MW), geothermal (12 MW), hydropower (80.3 MW) and biomass (34 MW) power plants. In terms of share by grid, Luzon contributed additional capacity of 659.5 MW or 71% of the newly installed capacities and Mindanao at 274.1 MW or 29% while Visayas has not installed any additional capacity for 2018.

## GENERATION



**Figure 4. 2017 vs. 2018 Generation Mix, Philippines (in GWh)**

The total gross generation of the country for 2018 increased to 99,765 GWh with a growth rate of 5.7% from the 2017 gross generation of 94,370 GWh. The majority of the generation was recorded in the Luzon grid with 72.9% contribution. Visayas and Mindanao grids recorded 14.3% and 12.8% share, respectively. Coal still dominated the power mix from 49.6% in 2017 to 52.1% in 2018. The increase in coal generation was attributed to the entry of new coal-fired power plants in Luzon and Mindanao grids. However, renewable energy technologies decreased its total generation share to 23.4% due to the drop in generation of hydro. Natural gas contributed 21.4% in the mix while oil-based technologies continued to have the least contribution in the power mix at 3.2%.

## POWER PROJECTS

**Table 4. Committed and Indicative Capacities, Philippines, as of 31 December 2018 (in MW)**

Fuel Type	Committed			Indicative		
	No. of Proponents	Capacity (MW)	% Share	No. of Proponents	Capacity (MW)	% Share
<b>Coal</b>	<b>10</b>	<b>5,085</b>	<b>80.3</b>	<b>10</b>	<b>10,463</b>	<b>31.5</b>
<b>Oil-Based</b>	<b>2</b>	<b>78</b>	<b>1.2</b>	<b>6</b>	<b>415</b>	<b>1.3</b>
<b>Natural Gas</b>	<b>1</b>	<b>650</b>	<b>10.3</b>	<b>5</b>	<b>4,060</b>	<b>12.2</b>
<b>Renewable Energy (RE)</b>	<b>30</b>	<b>516</b>	<b>8.2</b>	<b>152</b>	<b>18,261</b>	<b>55.0</b>
<i>Geothermal</i>	<i>2</i>	<i>81</i>	<i>1.3</i>	<i>3</i>	<i>200</i>	<i>0.6</i>
<i>Hydro</i>	<i>13</i>	<i>79</i>	<i>1.2</i>	<i>54</i>	<i>4,676</i>	<i>14.1</i>
<i>Biomass</i>	<i>12</i>	<i>215</i>	<i>3.4</i>	<i>20</i>	<i>343</i>	<i>1.0</i>
<i>Solar</i>	<i>3</i>	<i>141</i>	<i>2.2</i>	<i>62</i>	<i>10,199</i>	<i>30.7</i>
<i>Wind</i>	<i>0</i>	<i>-</i>	<i>-</i>	<i>13</i>	<i>2,843</i>	<i>8.6</i>
<b>TOTAL</b>	<b>44</b>	<b>6,329</b>	<b>100.0</b>	<b>173</b>	<b>33,199</b>	<b>100.0</b>

NOTE: Numbers may not sum up to total due to rounding off.

To address the increasing demand caused by the economic development, DOE encourages the private sector to invest in power generation to augment the needed capacity in the power system. As shown in Table 3, capacities from committed power projects reached 6,329 MW by the end of 2018. About 80% of these capacities are from coal-fired power projects that will provide baseload capacity in the system in the coming years.

The indicative power projects capacity amounted to 33,199 MW by the end of 2018. Coal-fired power projects contributed 31.5%, while 55.7% is expected to come from renewable energy technologies.

## SIGNIFICANT INCIDENTS

In terms of significant incidents for 2018, Luzon grid did not experience Red Alert occurrence. The non-issuance of Red alert notice implicates that there was no reserve inadequacy in the system that may cause rotating brownouts in the grid. However, Luzon grid still experienced seven occurrences of Yellow alerts during the following dates, wherein the reserve level is below the required contingency reserve of the grid:

- 26 February 2018 due to forced and unplanned outages of power plants, natural gas fuel restriction, and de-rating of power plants;
- 12 April 2018 due to forced and unplanned outages of power plants, and de-rating of power plants;

- 29-31 May 2018 due to high demand, forced and unplanned outages of power plants, and de-rating of power plants;
- 1 June 2018 due to forced and unplanned outages of power plants, and de-rating of power plants; and
- 4 June 2018 due to forced and unplanned outages of power plants, and de-rating of power plants.

On the other hand, Visayas experienced fifteen (15) Red alert notices and Yellow alerts especially on instances where large power plants are on simultaneous outages, planned or forced. For Visayas, the peak demand usually occurs in the evening and the unavailability of solar power plants at this time of the day contributes to the low reserve level of the grid.

Mindanao also has improved in terms of having lesser Red and Yellow alert notices in 2018, compared to the previous years due to the development of additional stable capacity from large coal-fired power plants in the grid. There was only one recorded major incident in the Mindanao grid that cause a partial blackout due to transmission line tripping on 8 November 2018 that affected areas in Zamboanga peninsula as well as the provinces of Lanao and Misamis Oriental.

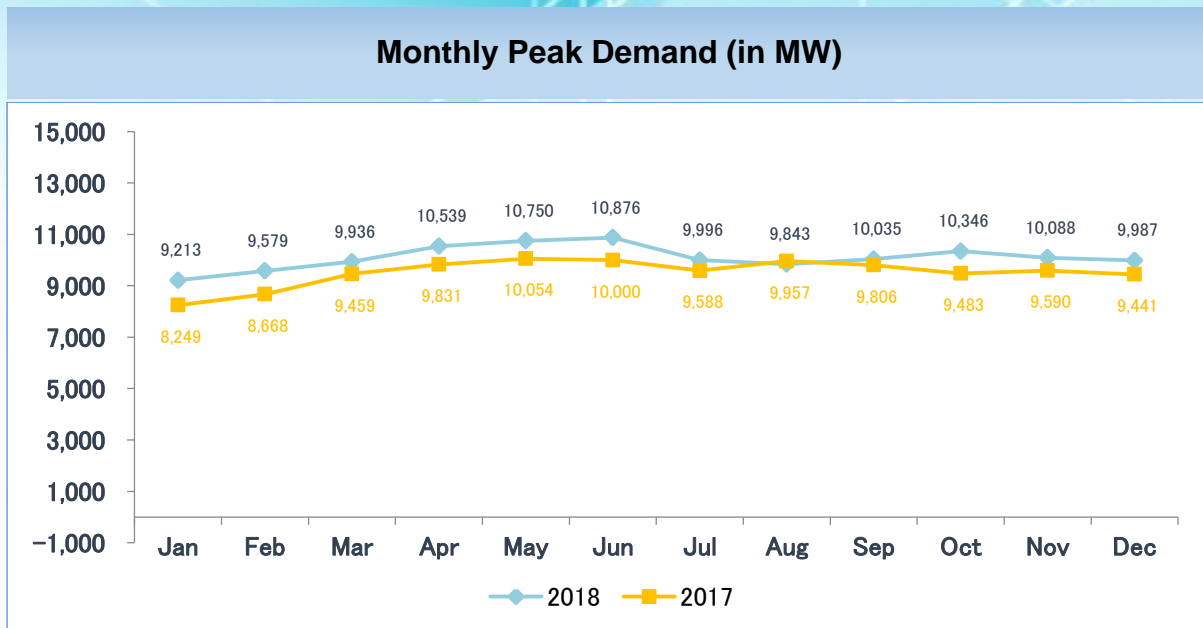


Figure 5. 2017 vs. 2018 Peak Demand

Source: NGCP

The peak demand of the Luzon grid soared to 10,876 MW for 2018, equivalent to 8.2% growth from the previous year. Along with the economic growth of Luzon, the increase in demand was attributed to high temperature and the implementation of the Tax Reform for Acceleration and Inclusion (TRAIN) Law wherein self-generating facilities running on oil-based fuel opted to source out their power from the grid.

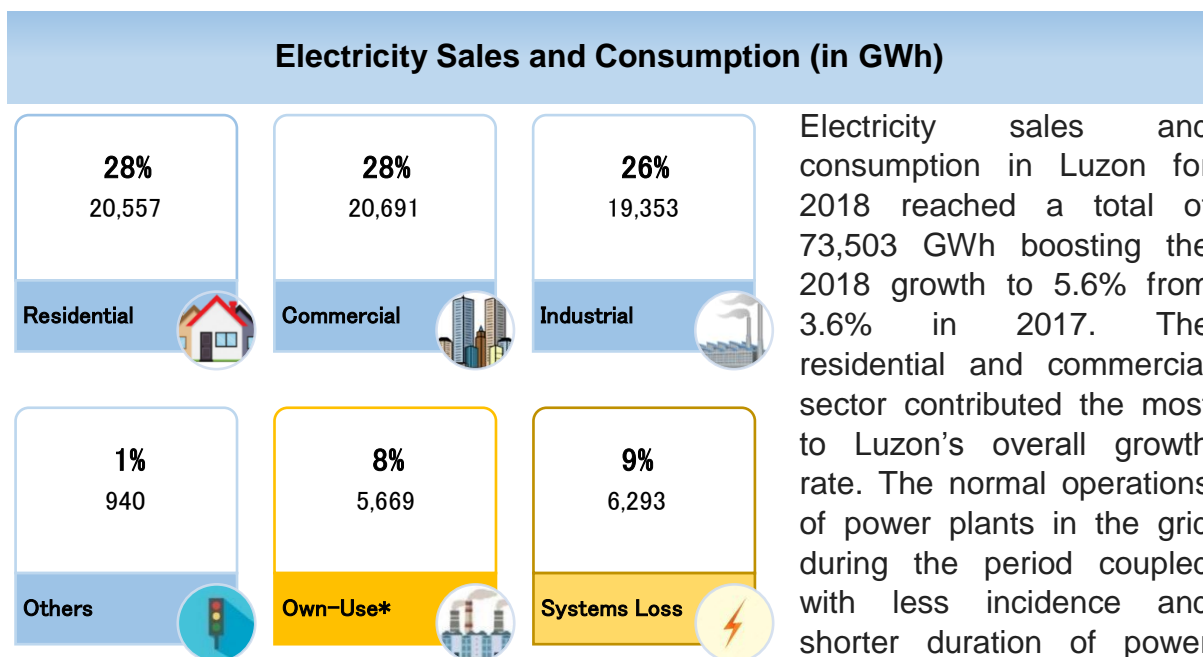


Figure 6. 2018 Electricity Sales and Consumption, Luzon

Electricity sales and consumption in Luzon for 2018 reached a total of 73,503 GWh boosting the 2018 growth to 5.6% from 3.6% in 2017. The residential and commercial sector contributed the most to Luzon's overall growth rate. The normal operations of power plants in the grid during the period coupled with less incidence and shorter duration of power plant outages were the major factors that contributed to the positive growth in Luzon's electricity sales and consumption in 2018. Luzon's share to the country's total electricity sales and consumption remained the largest at 73.7%.



**Table 5. Existing Installed and Dependable Capacity, as of 31 December 2018 (in MW)**

Fuel Type	Installed		Dependable	
	MW	Percent Share (%)	MW	Percent Share (%)
<b>Coal</b>	<b>6,264</b>	<b>37.8</b>	<b>5,970</b>	<b>39.9</b>
<b>Oil Based</b>	<b>2,612</b>	<b>15.8</b>	<b>1,715</b>	<b>11.5</b>
<b>Natural Gas</b>	<b>3,452</b>	<b>20.9</b>	<b>3,286</b>	<b>21.9</b>
<b>Renewable Energy</b>	<b>4,222</b>	<b>25.5</b>	<b>4,002</b>	<b>26.7</b>
<i>Geothermal</i>	<i>871</i>	<i>5.3</i>	<i>805</i>	<i>5.4</i>
<i>Hydro</i>	<i>2,547</i>	<i>15.4</i>	<i>2,475</i>	<i>16.5</i>
<i>Biomass</i>	<i>106</i>	<i>0.6</i>	<i>84</i>	<i>0.6</i>
<i>Solar</i>	<i>362</i>	<i>2.2</i>	<i>301</i>	<i>2.0</i>
<i>Wind</i>	<i>337</i>	<i>2.0</i>	<i>337</i>	<i>2.3</i>
<b>2018 TOTAL</b>	<b>16,549</b>	<b>100.00</b>	<b>14,973</b>	<b>100.00</b>
2017 TOTAL	15,743		14,430	

NOTE: Numbers may not sum up to total due to rounding off.

## Gross Generation (MWh)

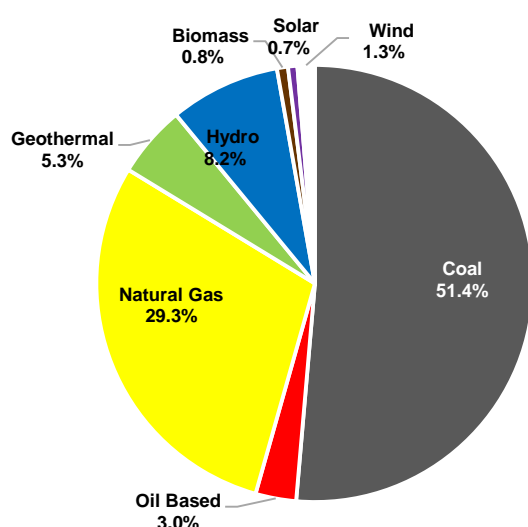


Figure 7. 2018 Gross Generation, Luzon

The gross generation in the Luzon grid reached 72,728 GWh for 2018 with a growth rate of 6.2%. Coal continuously dominated the generation mix of the Luzon grid with 51.4% share brought about by the commissioning of new coal power plants. This was followed by natural gas generation at 29.3%. Renewable energy contributed 16.3% of the generation with corresponding share from geothermal at 5.3%, hydro at 8.2%, biomass at 0.8%, solar at 0.7%, and wind at 1.3%. While oil-based technologies recorded the least share in generation with 3.0%.

**660  
MW**

• Newly Operational Plants

**4,775  
MW**

• Committed Projects

**26,805  
MW**

• Indicative Projects

**Table 6. Newly Operational Capacities, as of 31 December 2018 (in MW)**

Power Plant Facility Name	Capacity (MW)		Owner/ Operator
	Installed	Dependable	
<b>Coal</b>	<b>570</b>	<b>555</b>	
Pagbilao U3	420	420	Pagbilao Energy Corporation (PEC)
SCPC U3	150	135	SMC Consolidated Power Corporation (SCPC)
<b>Oil-Based</b>	<b>50</b>	<b>46</b>	
SLPGC U3	25	23	Southwest Luzon Power Generation Corporation (SLPGC)
SLPGC U4	25	23	
<b>Geothermal</b>	<b>12</b>	<b>12</b>	
Maibarara U2	12	12	Maibarara Geothermal Inc. (MGI)
<b>Hydro</b>	<b>8.5</b>	<b>8</b>	
Maris 1 Main Canal	8.5	8	SN Aboitiz Power (SNAP) - Magat, Inc.
<b>Biomass</b>	<b>19</b>	<b>15.4</b>	
ACNC	2	0.6	Asian Carbon Neutral Power Corporation (ACNC)
BBEC	5	4	Bicol Biomass Energy Corporation (BBEC)
SJC IPower Phase II	12	10.8	San Jose City I Power Corporation (SJC IPower)
<b>2018 TOTAL</b>	<b>660</b>	<b>636</b>	
2017 TOTAL	392	374	

**Table 7. Summary of Committed and Indicative Power Projects, as of 31 December 2018 (in MW)**

Type of Power Plant	Committed			Indicative		
	No. of Proponents	Capacity (MW)	% Share	No. of Proponents	Capacity (MW)	% Share
<b>Coal</b>	<b>6</b>	<b>3,950</b>	<b>82.7</b>	<b>7</b>	<b>8,935</b>	<b>33.3</b>
<b>Oil-Based</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>346</b>	<b>1.3</b>
<b>Natural Gas</b>	<b>1</b>	<b>650</b>	<b>13.6</b>	<b>5</b>	<b>4,060</b>	<b>15.1</b>
<b>Renewable Energy</b>	<b>12</b>	<b>175</b>	<b>3.7</b>	<b>77</b>	<b>13,464</b>	<b>50.2</b>
<i>Geothermal</i>	<i>1</i>	<i>31</i>	<i>0.7</i>	<i>1</i>	<i>130</i>	<i>0.5</i>
<i>Hydro</i>	<i>8</i>	<i>23</i>	<i>0.5</i>	<i>29</i>	<i>3,344</i>	<i>12.5</i>
<i>Biomass</i>	<i>2</i>	<i>6</i>	<i>0.1</i>	<i>11</i>	<i>164</i>	<i>0.6</i>
<i>Solar</i>	<i>1</i>	<i>115</i>	<i>2.4</i>	<i>30</i>	<i>8,550</i>	<i>31.9</i>
<i>Wind</i>	<i>0</i>	<i>-</i>	<i>-</i>	<i>6</i>	<i>1,275</i>	<i>4.7</i>
<b>2018 TOTAL</b>	<b>19</b>	<b>4,775</b>	<b>100.00</b>	<b>92</b>	<b>26,805</b>	<b>100.00</b>
2017 TOTAL	46	6,511		72	17,444	

NOTE: Numbers may not sum to total due to rounding off.

# VISAYAS

## Monthly Peak Demand (in MW)

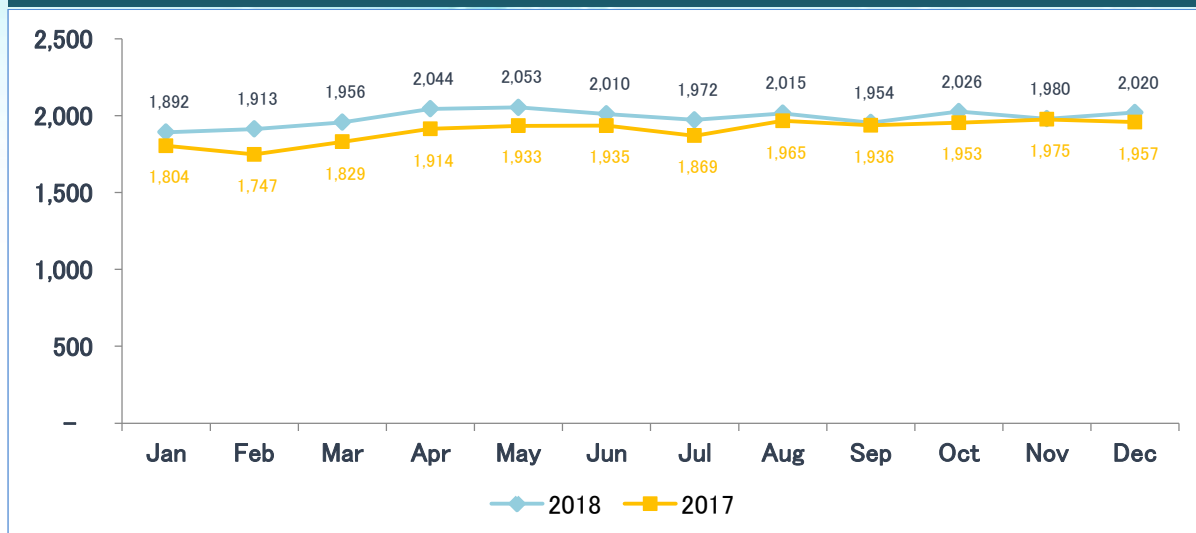


Figure 8. 2017 vs. 2018 Peak Demand, Visayas

Source: NGCP

Visayas grid registered a peak demand of 2,053 MW for 2018, projecting a growth of 3.9% from the previous year. Despite no additional installed capacity, the Visayas grid showed its resilience by meeting its increasing demand.

## Electricity Sales and Consumption (in GWh)

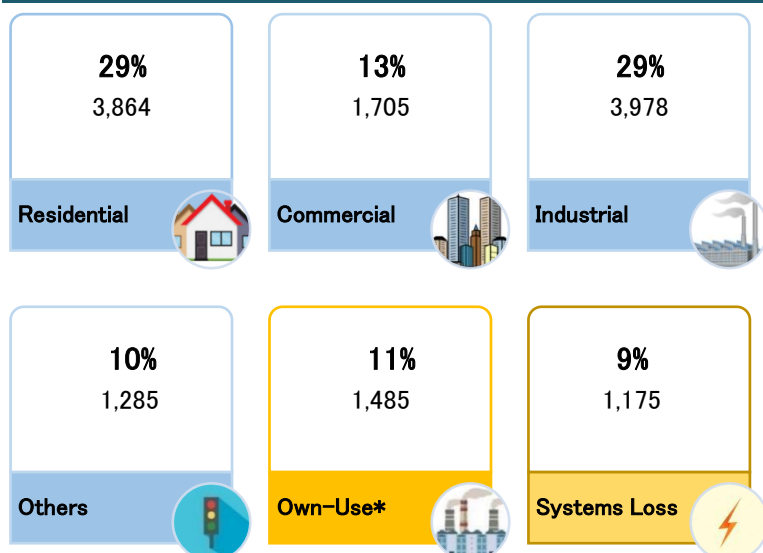


Figure 9. 2018 Electricity Sales and Consumption, Visayas

Recovering from the effects of the 6.5 magnitude earthquake that hit Jaro, Leyte on 6 July 2017, which massively caused power interruptions in the whole of Eastern Visayas and nearby Bohol Province, Visayas grid ranked the third among the three (3) grids in terms of growth in electricity sales and consumption by posting a slower growth of 4.3% from 5.0 % in 2017. However, said growth

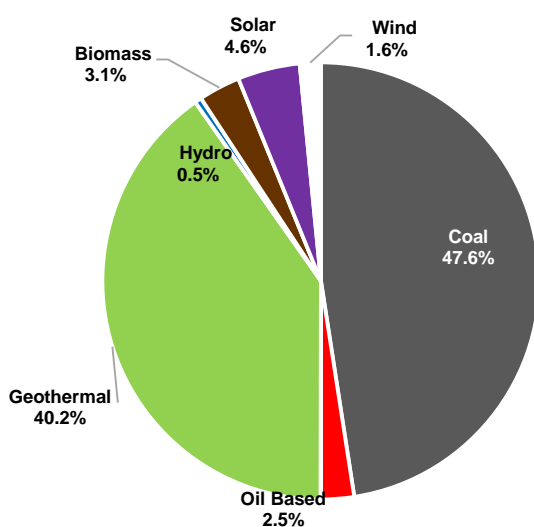
rate was much higher than expected considering the calamity that hit major provinces in the Visayas. Such turnaround growth was driven mainly by the robust rebound in all activities across all sectors. The expansion was boosted by the continued collaborative programs and efforts of the Government and support by the private sector to the reconstruction of the areas affected by Leyte earthquake, and other minor disasters in the previous year.

**Table 8. Existing Installed and Dependable Capacity, as of 31 December 2018 (in MW)**

Fuel Type	Installed		Dependable	
	MW	Percent Share (%)	MW	Percent Share (%)
Coal	1,059	30.7	1,043	34.8
Oil Based	738	21.4	502	16.7
Natural Gas	1	0.0	0	0.0
Renewable Energy	1,652	47.9	1,454	48.5
Geothermal	965	28.0	865	28.8
Hydro	19	0.6	19	0.6
Biomass	102	3.0	85	2.8
Solar	476	13.8	396	13.2
Wind	90	2.6	90	3.0
<b>2018 TOTAL</b>	<b>3,450</b>	<b>100.00</b>	<b>3,000</b>	<b>100.00</b>
2017 TOTAL	3,426		3,002	

NOTE: Numbers may not sum up to total due to rounding off.

## Gross Generation (MWh)



The Visayas grid registered 14,267 GWh of gross generation in 2018. The Visayas grid continued to remain as the renewable energy dominated grid in the country with 50.0% share of generation coming from renewable energy technologies with corresponding share from geothermal at 40.2%, solar at 4.6%, biomass at 3.1%, wind at 1.6% and hydro at 0.5%. For the non-renewable energy technologies, coal is still largest producer at 47.6% of generation while oil-based plants generated 2.5%.

Figure 10. 2018 Gross Generation, Visayas

<b>0 MW</b>	• Newly Operational Plants	<b>766 MW</b>	• Committed Projects	<b>3,903 MW</b>	• Indicative Projects
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# VISAYAS

**Table 9. Summary of Committed and Indicative Power Projects, as of 31 December 2018 (in MW)**

Type of Power Plant	Committed			Indicative		
	No. of Proponents	Capacity (MW)	% Share	No. of Proponents	Capacity (MW)	% Share
<b>Coal</b>	<b>2</b>	<b>435</b>	<b>56.8</b>	<b>1</b>	<b>600</b>	<b>15.4</b>
<b>Oil-Based</b>	<b>2</b>	<b>78</b>	<b>10.2</b>	<b>2</b>	<b>64</b>	<b>1.6</b>
<b>Natural Gas</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>
<b>Renewable Energy</b>	<b>10</b>	<b>253</b>	<b>33</b>	<b>37</b>	<b>3,240</b>	<b>83</b>
<i>Geothermal</i>	1	50	6.5	1	40	1
<i>Hydro</i>	2	23	3	13	728	18.6
<i>Biomass</i>	6	179	23.3	2	60	1.5
<i>Solar</i>	1	1	0.2	14	844	21.6
<i>Wind</i>	0	-	-	7	1,568	40.2
<b>2018 TOTAL</b>	<b>14</b>	<b>766</b>	<b>100</b>	<b>40</b>	<b>3,903</b>	<b>100</b>
<b>2017 TOTAL</b>	<b>18</b>	<b>775</b>		<b>27</b>	<b>3,399</b>	

NOTE: Numbers may not sum up to total due to rounding off.

# MINDANAO

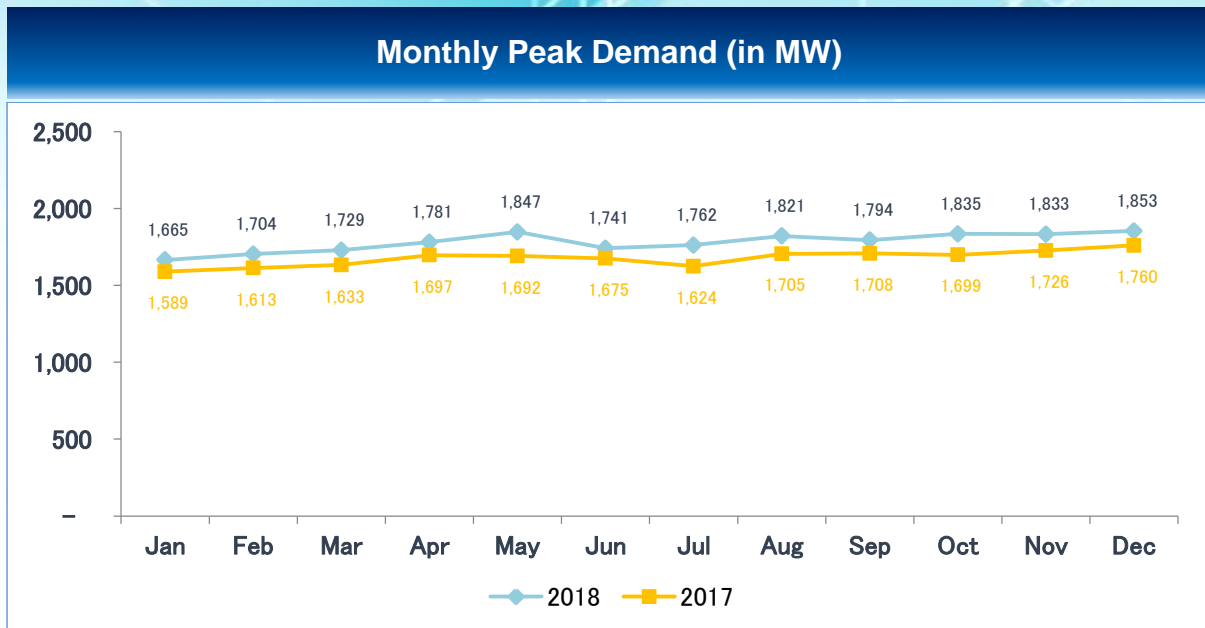


Figure 11. 2017 vs. 2018 Peak Demand, Mindanao

Source: NGCP

The Mindanao grid reached its peak demand of 1,853 MW in 2018 with a 5.3% growth rate. Coming from a suppressed demand status due to lack of supply in 2015, Mindanao grid promptly caught up in terms of demand and supply, now with the highest reserve margin percentage among the three grids, showing its readiness to massive infrastructure projects brought about by the Build, Build, Build Program of the government.

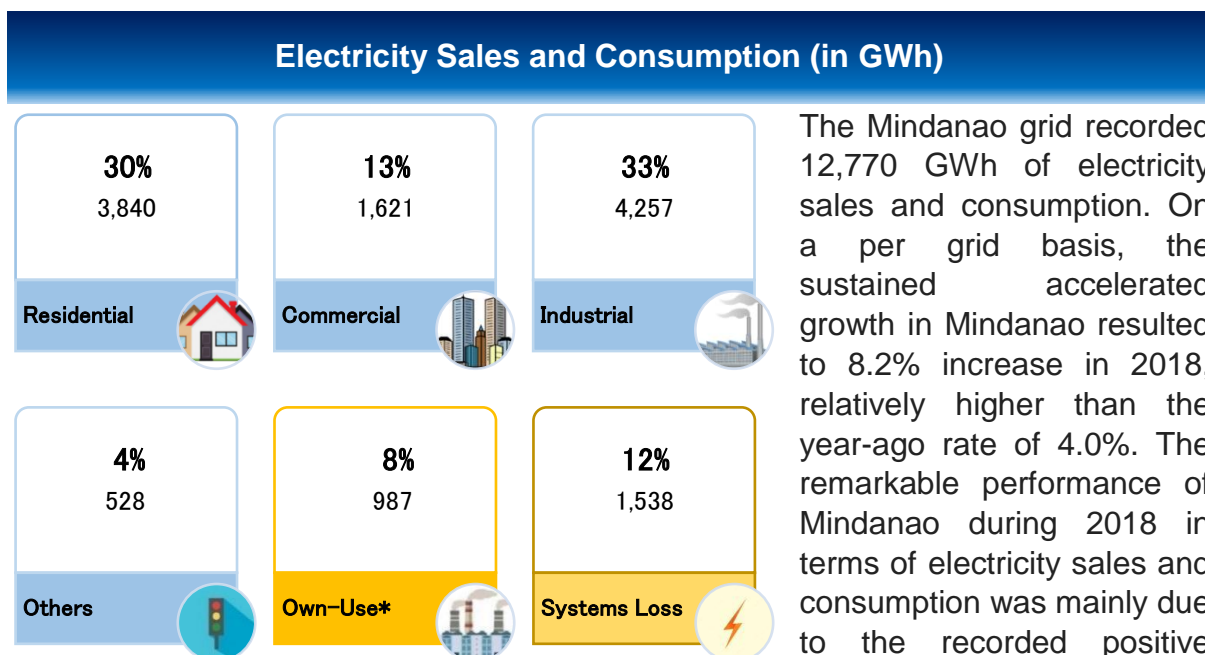


Figure 12. 2018 Electricity Sales and Consumption, Mindanao

# MINDANAO

**Table 10. Existing Installed and Dependable Capacity, as of 31 December 2018 (in MW)**

Fuel Type	Installed		Dependable	
	MW	Percent Share (%)	MW	Percent Share (%)
Coal	1,521	39.9	1,355	41.5
Oil Based	942	24.7	778	23.8
Natural Gas	0	0.0	0	0.0
Renewable Energy	1,353	35.5	1,136	34.8
Geothermal	108	2.8	100	3.1
Hydro	1,134	29.7	978	29.9
Biomass	51	1.3	14	0.4
Solar	59	1.5	44	1.4
Wind	0	0.0	0	0.0
<b>2018 TOTAL</b>	<b>3,815</b>	<b>100.00</b>	<b>3,269</b>	<b>100.00</b>
2017 TOTAL	3,559		3,083	

NOTE: Numbers may not sum up to total due to rounding off.

## Gross Generation (GWh)

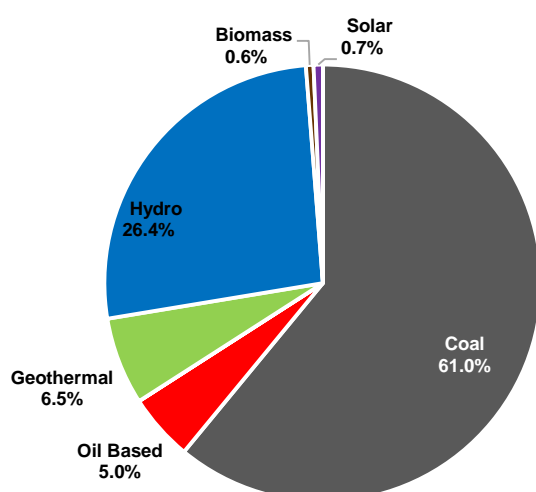


Figure 13. 2018 Gross Generation, Mindanao

The Mindanao gross generation amounted to 12,770 GWh for 2018 further increased its share in the mix at 61.0% due to the addition of 150 MW SMC Malita Coal generation. This increase is expected to continue when GN Power Kauswagan coal-fired power plant comes online by 2019. Meanwhile, renewable energy sources contributed 34.1% share, comprising of geothermal (6.5%), hydro (26.4%), biomass (0.6%), and solar (0.7%). Similar to the Luzon and Visayas grids, oil-based plants provided least contribution at 5.0%.

**274  
MW**

• Newly  
Operational  
Plants

**788 MW**

• Committed  
Projects

**2,491  
MW**

• Indicative  
Projects

# MINDANAO

**Table 11. Newly Operational Capacities, as of 31 December 2018 (in MW)**

Power Plant Facility Name	Capacity (MW)		Owner/ Operator
	Installed	Dependable	
<b>Coal</b>	<b>150</b>	<b>135</b>	
SMC Malita U2	150	135	SMC Consolidated Power Corporation (SCPC)
<b>Oil-Based</b>	<b>37.3</b>	<b>37</b>	
KEGI-Jimenez	7.8	7.5	King Energy Generation Inc. (KEGI)
PBI	10.4	10.4	Peak Power Bukidnon. Inc. (PBI)
PSFI 2	5.2	5.2	Peak Power San Francisco (PSFI)
PSI 2	13.9	13.9	Peak Power Soccsargen, Inc. (PSI)
<b>Hydro</b>	<b>71.8</b>	<b>71.8</b>	
New Bataan	3	3	Euro Hydro Power (Asia) Holdings, Inc.
Manolo Fortich	68.8	68.8	Hydro Electric Development Corporation (HEDCOR) Bukidnon, Inc.
<b>Biomass</b>	<b>15</b>	<b>13.5</b>	
Lamsan	15	13.5	Lamsan Power Corporation
<b>2018 TOTAL</b>	<b>274.1</b>	<b>257.3</b>	
<b>2017 TOTAL</b>	<b>337</b>	<b>305</b>	

**Table 12. Summary of Committed and Indicative Power Projects, as of 31 December 2018**

Type of Power Plant	Committed			Indicative		
	No. of Proponents	Capacity (MW)	% Share	No. of Proponents	Capacity (MW)	% Share
<b>Coal</b>	<b>2</b>	<b>700</b>	<b>88.8</b>	<b>2</b>	<b>928</b>	<b>37.2</b>
<b>Oil-Based</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>6</b>	<b>0.2</b>
<b>Natural Gas</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>
<b>Renewable Energy</b>	<b>8</b>	<b>88</b>	<b>11.2</b>	<b>38</b>	<b>1,558</b>	<b>62.5</b>
<i>Geothermal</i>	0	-	-	1	30	1.2
<i>Hydro</i>	3	33	4.2	12	603	24.2
<i>Biomass</i>	4	30	3.8	7	119	4.8
<i>Solar</i>	1	25	3.2	18	805	32.3
<i>Wind</i>	0	-	-	0	-	-
<b>2018 TOTAL</b>	<b>11</b>	<b>788</b>	<b>100</b>	<b>41</b>	<b>2,491</b>	<b>100</b>
<b>2017 TOTAL</b>	<b>28</b>	<b>1,332</b>		<b>29</b>	<b>1,981</b>	

NOTE: Numbers may not sum to total due to rounding off.



## TRANSMISSION

### GRID PROFILE

As of June 2018, a total of 33,485 MVA substation capacities and 21,181 circuit-km are accounted in the transmission assets being managed by the National Grid Corporation of the Philippines (NGCP). The decrease in substation capacities in 2018 is attributed to NGCP's transformer replacement program. Table 13 shows the summary of these existing facilities per grid in 2018 vs. 2017.

<b>Table 13: Summary of Existing Facilities, 2017 vs. 2018</b>		
<b>Total Substation Capacity (MVA)</b>		
	2017	2018
<b>Philippines</b>	<b>34,007</b>	<b>33,485</b>
• Luzon	25,887	25,687
• Visayas	4,474	4,178
• Mindanao	3,646	3,621
<b>Total Transmission Line Length (CKT-KM)</b>		
	2017	2018
<b>Philippines</b>	<b>20,849</b>	<b>21,181</b>
• Luzon	9,795	9,912
• Visayas	4,973	5,027
• Mindanao	6,081	6,241

Source: 2019-2040 TDP

To ensure that voltages across the network are within the levels prescribed in the Philippine Grid Code, capacitor banks and shunt reactors have been installed in appropriate locations in different parts of the grid. Table 14 shows the summary of the total existing facilities of capacitor banks and shunt reactors for 2018.

<b>Table 14: Summary of Installed Capacitor Banks and Shunt Reactors, 2018</b>		
	<b>CAPACITOR BANK (MVAR)*</b>	<b>SHUNT REACTOR (MVAR)</b>
Philippines	2,759.60	1,472.50
Luzon	2,258.50	875
Visayas	238.60	575
Mindanao	262.50	22.50

## TRANSMISSION PROJECTS COMPLETED

For 2018, 6 main grid projects were completed and energized by NGCP, of which 74 ckt-km are located in Luzon, and 134.7 ckt-km and 173 ckt-km are in Visayas and Mindanao, respectively while 141 MVA Substation capacities were added in Mindanao. These projects were intended to facilitate entry of generation capacities, load growth and system reliability.

**Table 15. Transmission Grid Projects Completed, 2018**

Project Name/Components	Purpose	MVA	MVAR	CKT-KM	Date of Completion/Energization
<b>Luzon Leg</b>					
Bataan 230 kV Reinforcement	To accommodate the connection of the committed 300 MW SMC CPC CFPP project to the Luzon Grid.	-	-	36	31 March 2018
<ul style="list-style-type: none"> <li>Reconductoring of Mexico–Hermosa T/L &amp; Mexico–Cabanatuan “Cut in” Cruz na Daan Line 1 &amp; 2</li> <li>Reconductoring of Hermosa–Limay T/L Line 1 &amp; 2</li> </ul>				38	22 Jun 2018
<b>Visayas Leg</b>					
Eastern Panay Transmission Line Project	To provide a more reliable transmission service to Eastern Panay and accommodate entry of PCPC’s 270 MW CFPP.	-	-	42	Nov 2017
<ul style="list-style-type: none"> <li>Concepcion–Barotac Viejo 138 kV T/L 1</li> <li>Concepcion–Tapping pt. near Sara 69 kV OHTL</li> </ul>				14.2	Sept 2018
Ormoc–Babatngon 138 kV Transmission Line	To provide N-1 contingency for the existing corridor by installing a second circuit.	-	-	78.54	8 Dec 2018
<ul style="list-style-type: none"> <li>Ormoc–Babatngon T/L</li> <li>Ormoc Substation Exp.</li> <li>Babatngon Substation Exp.</li> </ul>					

Project Name/Components	Purpose	MVA	MVAR	CKT-KM	Date of Completion/Energization
<b>Mindanao Leg</b>					
Aurora–Polanco 138 kV T/L <ul style="list-style-type: none"> <li>Aurora–Polanco T/L               <ul style="list-style-type: none"> <li>Line 1</li> <li>Line 2</li> </ul> </li> <li>Aurora Substation Exp.</li> <li>Polanco S/S (New)</li> </ul>	To serve the growing demand of Dipolog City and neighboring load centers as well as ensure continuous and reliable power supply in the Zamboanga Del Norte area.	75	-	158	20 Jun 2018 22 Jul 2018  20 Jun 2018  20 Jun 2018
Manolo Fortich Switchyard 138 kV Switchyard Project <ul style="list-style-type: none"> <li>HBI Hydro Power Plant – Manolo Fortich Switchyard T/L</li> <li>Manolo Fortich S/S</li> </ul>	To enable the full capacity dispatch of the 68.8 MW Manolo Fortich Hydroelectric Power Plant.	66	-	15	28 May 2018
Agus 6 Switchyard Upgrading / Rehabilitation Project	To upgrade the existing obsolete and aging primary and secondary equipment and devices in Agus 6 Switchyard.	-	-	-	31 Oct 2018
<b>Total</b>		<b>141</b>	<b>-</b>	<b>381.74</b>	<b>6 Projects</b>

## MAJOR COMMITTED PLANTS AND ASSOCIATED TRANSMISSION PROJECTS

The following tables and maps show the list of major committed plants on the Grid and the associated transmission projects that will accommodate their entry:

### Luzon Grid

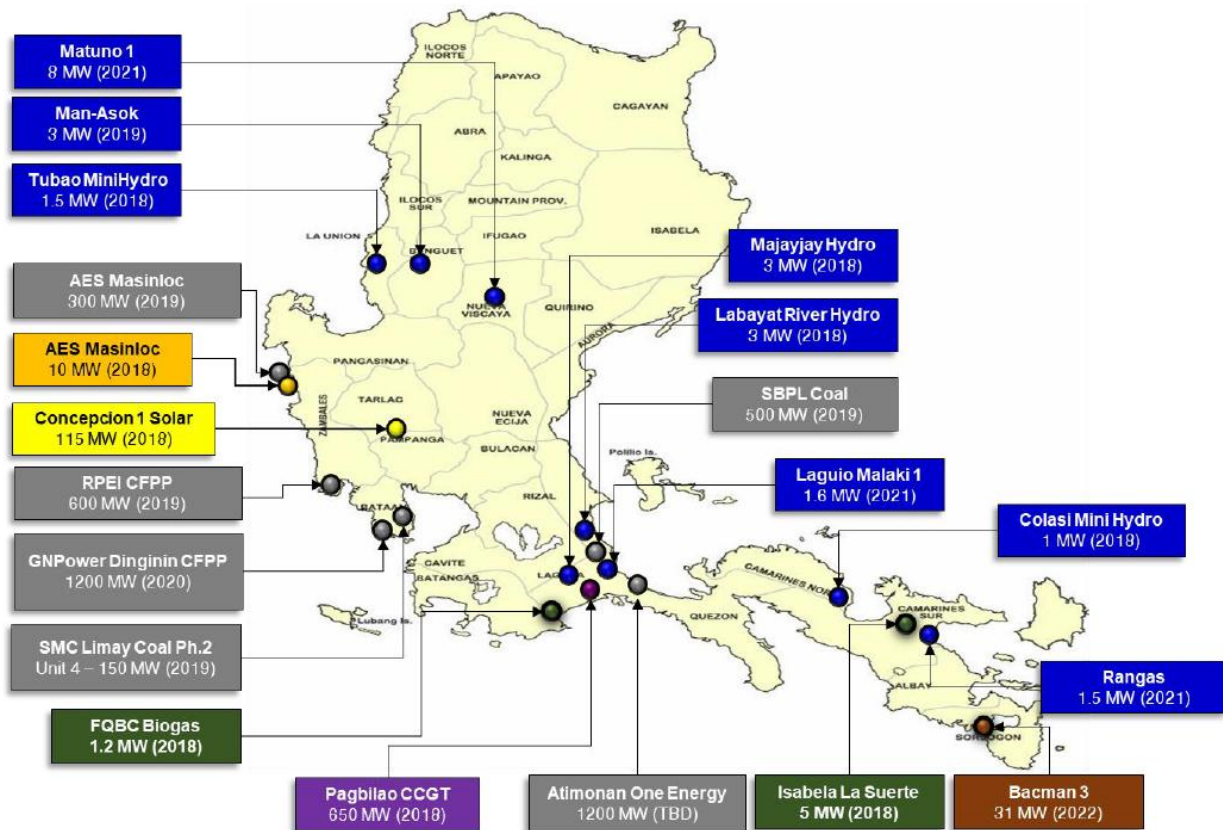


Figure 14. Luzon Generation Capacity Addition (Committed Power Plants)

**Table 16. Luzon Power Generation Projects as of August 2018 with Associated Transmission Projects**

Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC*
<b>COAL</b>					
SMC Limay Coal Phase 2 Unit 4	150	2018	Lamao 230 kV Substation	Bataan 230 kV Grid Reinforcement Project	Aug 2019
San Buenaventura (SBPL) Coal	500	2018	QPPL 230 kV Substation	Pagbilao 500 kV Substation	Nov 2019
AES Masinloc Expansion	300	2019	Masinloc 230 kV Substation	None	N/A



Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC*
RPEI Coal-Fired Power Plant	600	2018			
GN Power Dinginin Coal-Fired Power Plant	1200	2019	Limay 500 kV Substation	Mariveles–Hermosa 500 kV Transmission Line Project / Hermosa–San Jose 500 kV Transmission Line Project	Sep 2019/ Dec 2019
AOE Coal-Fired Power Plant	1200	TBD	Pagbilao 500 kV Substation	Pagbilao 500 kV Substation/ Pagbilao–Tayabas 500 kV Transmission Line Project	Nov 2019/ Dec 2024
<b>NATURAL GAS</b>					
Pagbilao CCGT Power Plant	650	2018	Pagbilao 230 kV Substation	Pagbilao 500 kV Substation	Nov 2019
<b>HYDRO</b>					
Kabayan 2 (Natalang HEP)	38	2020	Ambuklao 230 kV Substation	Ambuklao–Binga 230 kV Transmission Line Upgrading Project / Binga–San Manuel Transmission Line Project	Dec 2021 / Dec 2021
<b>SOLAR</b>					
Concepcion 1 Solar Power Project	115	2018		None	N/A
<b>GEOHERMAL</b>					
Bacman 3 (Tanawon)	31	2022	Bacman 230 kV Substation	None	N/A

Note: \* ETC – Expected Time of Completion

## Visayas Grid

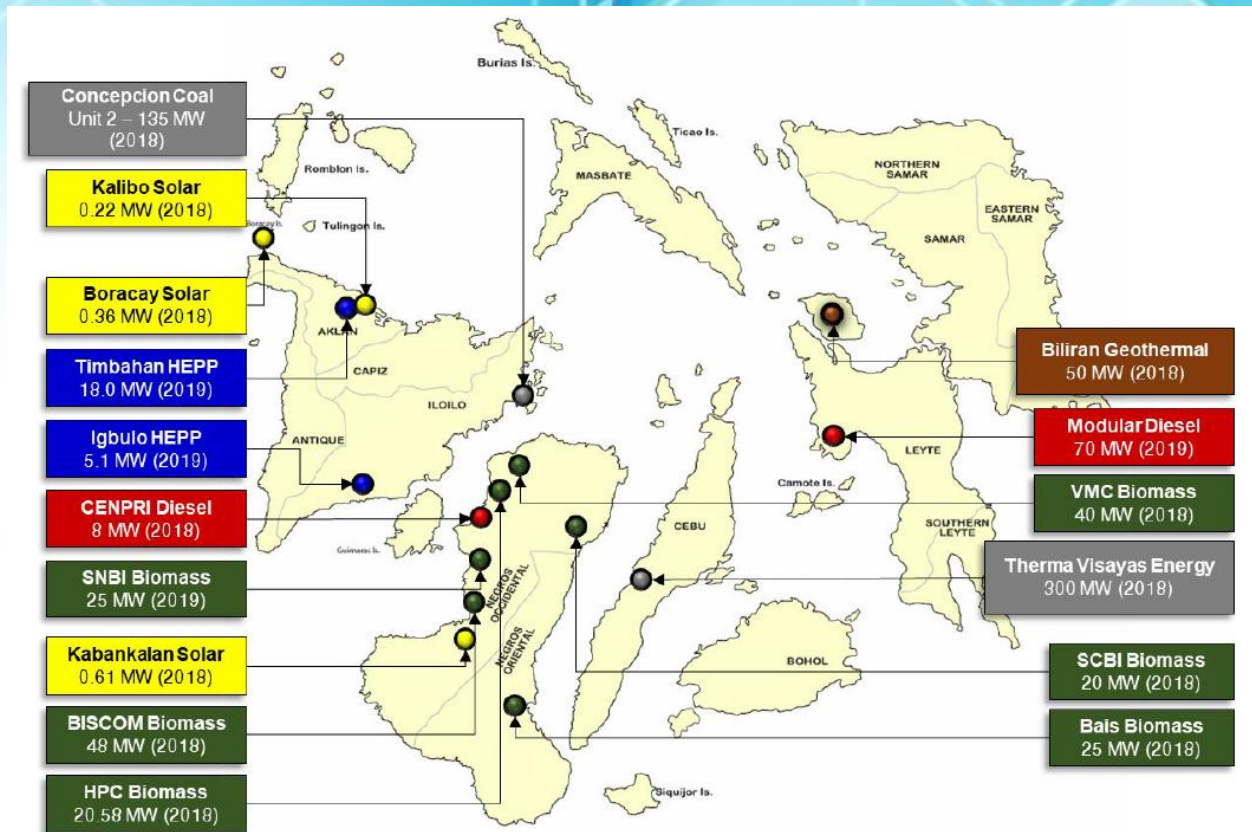


Figure 15. Visayas Generation Capacity Addition (Committed Power Plants)

Table 17. Visayas Power Generation Projects as of August 2018 with Associated Transmission Projects					
Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC
<b>COAL</b>					
Therma Visayas Energy	300	2018	Direct connection to Magdugo 230 kV Substation	CNP 230 kV Backbone Stage 3 • Magdugo – Cebu 230 kV line • Magdugo Substation 230 kV Substation	Dec 2020
				CNP 230 kV Backbone Stage 2 (Cebu 230 kV SS)	July 2019

Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC
Palm Concepcion Coal-Fired Power Plant Unit 2	135	2018	Direct connection to Concepcion Substation	Eastern Panay Transmission Line Project	March 2018
<b>OIL-BASED</b>					
CENPRI Diesel Power Plant Unit 5	8	2018	Tap connection along Bacolod–San Enrique 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
Modular Diesel Ancillary Service Power Plant	70	2019	N/A	None	N/A
<b>HYDRO</b>					
Igbulo (Bais) Hydro	5.10	2018	Tap connection along Sta. Barbara–Miagao 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
Timbalan	18	2019	Tap connection along Panitan–Nabas 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
Cantakoy HEP	8	2020	Tap connection along Ubay–Carmen 69 kV line	None	N/A
Malugo	6	2020	Tap connection along Bacolod–Silay 69 kV	CNP 230 kV Backbone Stage 3	Dec 2020
Main Aklan River Hydro	15	2021	N/A	None	N/A
Ilaguen 4	10	2021	N/A	None	N/A
<b>BIOMASS</b>					
SCBI Multi-Feedstock Biomass Power Plant	20	2018	Tap connection along Cadiz–San Carlos 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020

Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on DOE List of Private Sector Initiated Power Projects as of August 2018		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC
HPC Cogeneration Power Plant	20.58	2018	Tap along Cadiz–Victorias 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
VMC Cogeneration Power Plant	40	2018	Tap along Cadiz–Victorias 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
BISCOM Cogeneration Power Plant	48	2018	Tap connection along Kabankalan–La Castellana 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
Bais Bagasse-Fired Cogeneration Power Plant	25	2018	Tap connection along Amlan–Guihulngan 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
SNBI Cane trash-Fired Biomass Power Plant	25	2019	Tap connection along Bacolod–San Enrique 69 kV line	CNP 230 kV Backbone Stage 3	Dec 2020
<b>GEOHERMAL</b>					
Biliran Geothermal Plant	50	2018	Tap connection along Ormoc–Biliran 69 kV line	None	N/A



## Mindanao Grid

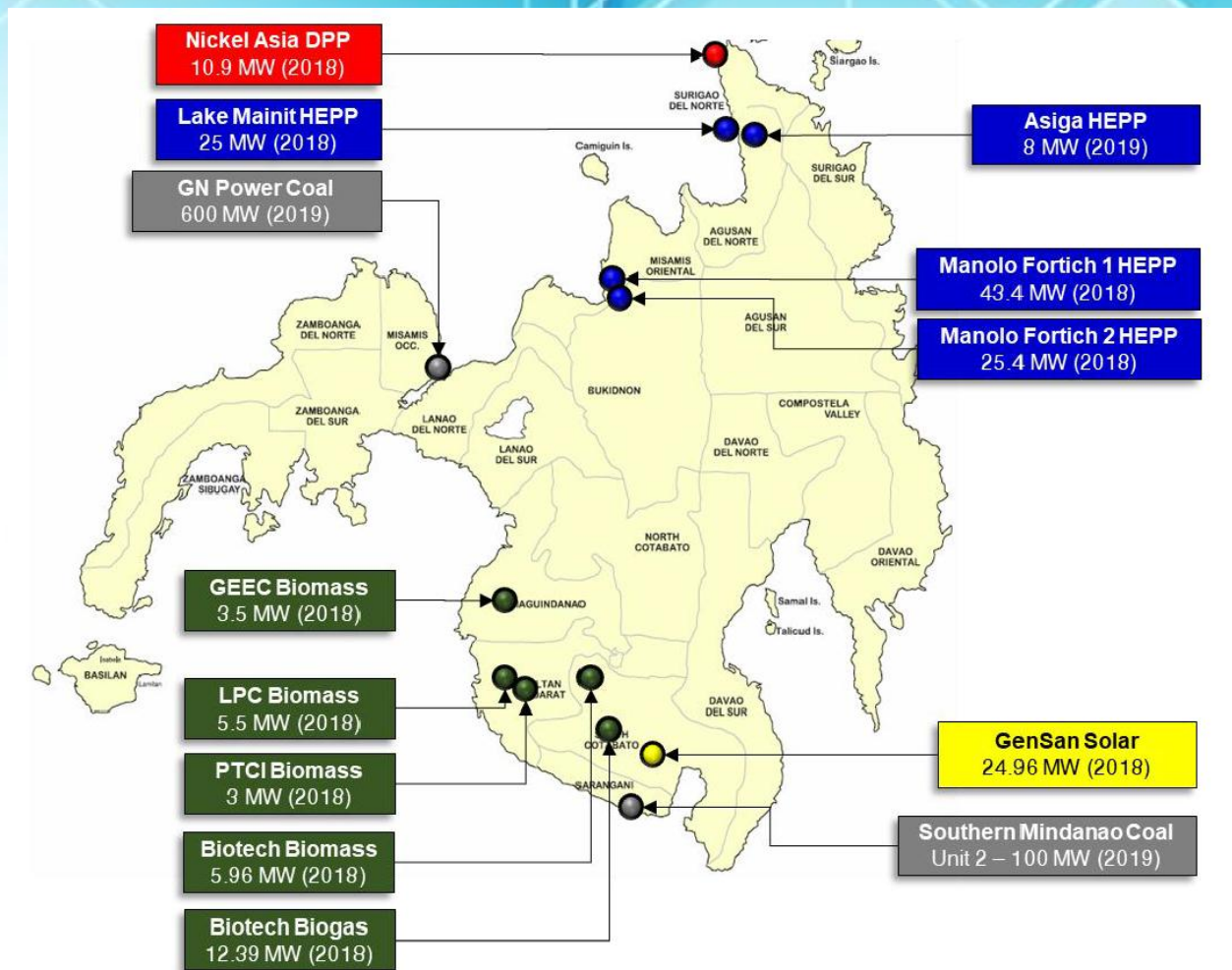


Figure 16. Mindanao Generation Capacity Addition (Committed Power Plants)

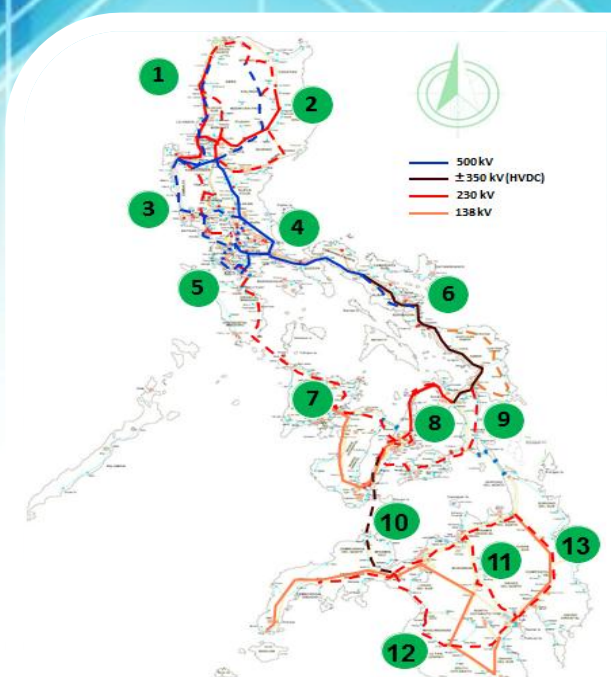
Table 18. Mindanao Power Generation Projects as of August 2018 with Associated Transmission Projects					
Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC
<b>COAL</b>					
GNPower Kauswagan Clean Coal-Fired Power Plant	600	2018	Kauswagan Substation	Balo-I – Kauswagan 230 kV Transmission Line Project	Sept 2018
Southern Mindanao Coal Fired Power Station Phase 2	100	2018	General Santos Substation	PCB included in Kabacan Substation Project	Dec 2021

Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC
<b>HYDRO</b>					
Manolo Fortich 2	25.40	2018	Manolo Fortich Switchyard	Manolo Fortich 138 kV Switching Station Project	Completed
Lake Mainit	25	2018	ANECO's Santiago Substation	None	N/A
Asiga	8	2019	ANECO's 69 kV Transmission System	None	N/A
Bubunawan Hydroelectric	23	2021	Manolo Fortich Switchyard	Manolo Fortich 138 kV Switching Station Project	Completed
Culaman Hydroelectric	10	2021	Manolo Fortich Switchyard	Manolo Fortich 138 kV Switching Station Project	Completed
Katipunan River Mini Hydro	6.20	2021	BSTC's 69 kV Transmission System	None	N/A
Mangima Hydroelectric	10	2022	Manolo Fortich Switchyard	Manolo Fortich 138 kV Switching Station Project	Completed
Lower Maladugao River Mini-Hydropower Project	15.70	2022	FIBECO's 69 kV Transmission System	None	N/A
Maladugao (Upper Cascade) Hydroelectric Power Project	8.40	2022	FIBECO's 69 kV Transmission System	None	N/A
Pulanai	10.60	2022	BSTC's 69 kV Transmission System	None	N/A
Polandoc	5.70	2022	Sindangan Substation	Siom – Sindangan – Salug 69 kV Transmission Line Project	2030

Based on DOE List of Private Sector Initiated Power Projects as of August 2018			Based on Transmission Development Plan 2019-2040		
Proposed Major Power Plants	Capacity (MW)	Comm. Year	Connection Point	Associated Transmission Project	ETC
Bayug	17.81	2022	N/A	None	N/A
Kalaong 1	7.40	2022	SOCOTECO II's 69 kV Transmission System	None	N/A
Puyo Hydroelectric Power Project	30	2023	Butuan Substation	None	N/A
Cabadbaran Hydroelectric Power Project	9.75	2024	Butuan – Cabadbaran – Santiago 69 kV Transmission Line	None	N/A
Tagoloan	39	2025	Manolo Fortich Switchyard	Manolo Fortich 138 kV Switching Station Project	Completed
Clarín	5	2025	Aurora – Ozamis – Oroqueta 69 kV Transmission Line	None	N/A
Lanon (Lam-alu)	9.50	2025	Tacurong Substation	None	N/A
Agus III	225	2025	Balo-I Substation	None	N/A
<b>SOLAR</b>					
GenSan Solar Power Project	24.96	2018	N/A	None	N/A
<b>BIOMASS</b>					
LPC Rice Husk-Fired Biomass	5.50	2018	Sultan Kudarat Substation	None	N/A

## TRANSMISSION MASTER PLAN 2019-2040

- 1 Bolo to Laoag 500 kV Backbone
- 2 Nagsaag to Kabugao 500 kV Backbone
- 3 Western Luzon 500 kV Backbone
- 4 Metro Manila 500 kV Backbone Loop
- 5 Batangas-Mindoro Interconnection
- 6 Luzon-Visayas HVDC Bipolar Operation
- 7 Cebu-Negros-Panay 230 kV Backbone
- 8 Metro Cebu 230 kV Backbone Loop
- 9 Cebu-Bohol-Leyte 230 kV Backbone
- 10 Mindanao-Visayas Interconnection
- 11 Mindanao Backbone 230 kV Energization
- 12 Western Mindanao 230 kV Transmission Backbone
- 13 Eastern Mindanao 230 kV Transmission Backbone



For 2019 and onwards, NGCP focuses on upgrading and expanding transmission backbones to support entry of new generating facilities and allow market competition.

**Table 19. Proposed Transmission Projects, 2019-2040**

Project Name	Provinces	ETC
Bolo to Laoag 500 kV Backbone	Ilocos Sur, La Union, Pangasinan	Dec 2024
Nagsaag to Kabugao 500 kV Backbone	Isabela, Pangasinan, and Apayao	Dec 2035
Western Luzon 500 kV Backbone	Pangasinan, Zambales	Jun 2025
Metro Manila 500 kV Backbone Loop	Taguig	Sept 2021
Batangas-Mindoro Interconnection Project	Batangas, Oriental Mindoro and Occidental Mindoro	Dec 2024
Luzon-Visayas HVDC Bipolar Operation	Camarines Sur and Leyte	Dec 2030
Palawan-Mindoro Interconnection	Mindoro and Palawan	Dec 2024
Cebu-Negros-Panay 230 kV Backbone	Cebu, Negros Occidental, Iloilo	Dec 2020
Metro Cebu 230 kV Backbone Loop	Cebu	Dec 2040
Cebu-Bohol-Leyte 230 kV Backbone	Cebu, Bohol, and Leyte	Dec 2035
Mindanao-Visayas Interconnection Project	Cebu, Lanao del Norte, Zamboanga del Norte	Dec 2020
Mindanao 230 kV Backbone	Mindanao Island	Mar 2019
Western Mindanao 230 kV Transmission Backbone	Zamboanga del Sur, Sultan Kudarat, Maguindanao, South Cotabato	Dec 2040
Eastern Mindanao 230 kV Transmission Backbone	Agusan Del Norte, Agusan Del Sur, Compostella Valley	Jan 2025



## SIGNIFICANT INCIDENTS

Several incidents caused multiple power interruptions in the Grid in 2018.

- 22 July 2018 due to recorded Heavy Monsoon rains in Olongapo City, which flooded multiple NGCP substations and resulted to trippings of the following substations and transmission lines:

Transmission Line	Duration (hrs)	Frequency
Hermosa-Olongapo 230 Kv L	18.08	1
Kadampat 500/230/13.8 Kv T1 (600mva)	1.53	1
Olongapo 230/69/13.8 Kv T2 (50mva)	19.97	1
Olongapo 230/69/13.8 Kv T3 (100mva)	15.20	1
Olongapo-Hanjin 230 Kv L	14.27	1
Olongapo-Subic-Enron 230 Kv L1	14.13	1

- 24 July 2018 due to occurrence of Heavy Monsoon rains in Olongapo City, that flooded multiple substations of NGCP and resulted to trippings of the following substations and transmission lines:

Transmission Line	Duration (hrs)	Frequency
Botolan 230/69/13.8 Kv T1 (50mva)	1.75	1
Hermosa-Olongapo 230 Kv L	12	1
Olongapo 230/69/13.8 Kv T2 (50mva)	12.33	1
Olongapo 230/69/13.8 Kv T3 (100mva)	16.47	1
Olongapo-Hanjin 230 Kv L	11.27	1
Olongapo-Subic-Enron 230 Kv L1	12.75	1

- 15 September 2018 due to the entry of Typhoon Ompong that caused 12 trippings on the following transmission lines in Northern Luzon and Central Luzon Grid:

<b>Transmission lines</b>	<b>Duration (hrs)</b>	<b>Frequency</b>
Ambuklao-Bayombong 230 Kv L1	0.23	1
Bantay-Currimao 115 Kv L	0.32	1
Binga-La Trinidad 230 Kv L1	0.63	1
Currimao-Laoag 115kv L	0.48	1
Kadampat-Masinloc 230 Kv L2	0.12	1
La Trinidad-Bauang 230 Kv L2	0.78	2
Laoag-Edc Burgos 115 Kv L (Co)	0.83	1
Laoag-Nlrec 115 Kv L2 (Co)	0.90	1
San Esteban-Laoag 230 Kv L1	21.55	2
San Esteban-Laoag 230 Kv L2	22.87	1

- 30 October 2018 due to Typhoon Rosita, that affected Northern Luzon and Central Luzon Grid with a total occurrence of 12 trippings on the following Transmission Lines:

<b>Transmission Line</b>	<b>Duration (hrs)</b>	<b>Frequency</b>
Bayombong 230/69/13.8 Kv T2 (75mva)	0.43	1
Binga 230/69/13.8 Kv T1 (50mva)	0.57	1
Binga-La Trinidad 230 Kv L1	14.08	2
Dasmarinas-Ilijan 500 Kv L	0.016	1
New Concepcion-Clark 230kv L1 (Co)	2.02	1
San Esteban-Bantay 115 Kv L	3.93	2
Santiago 230/69/13.8 Kv T1 (100mva)	7.98	1
Santiago-Bayombong 230 Kv L2	10.67	1
Santiago-Gamu 230 Kv L	34.07	1
Santiago-Magat 230 Kv L1	9.67	1

## DISTRIBUTION

There are one-hundred fifty (150) distribution utilities (DUs) in the country, of which one-hundred twenty-one (121) are Electric Cooperatives, eighteen (18) Privately-Owned Distribution Utilities, five (5) local government unit owned and operated utilities, five (5) entities duly authorized to operate within the economic zones, and one (1) Multi-Purpose Cooperative.







To ensure the reliability and security of power supply, DUs have implemented various capital expenditure projects including electrification, network and non-network projects. As of 2018, a total of 6,278.0 ckt-km of sub-transmission lines, 160,640.3 ckt-km of distribution lines and 26,840.5 MVA substation capacities were completed. Table 20 shows the actual completed projects of DUs per grid:

**Table 20. 2018 Capital Expenditure Projects**

Capital Expenditure Projects		
<b>Luzon</b>		
Subtransmission Facilities	ckt-km	3,514.5
Distribution Facilities	ckt-km	76,454.7
Substation Capacities	MVA	21,640.4
Reactive Power Compensation Plan	MVAr	892.4
<b>Visayas</b>		
Subtransmission Facilities	ckt-km	980.1
Distribution Facilities	ckt-km	41,249.0
Substation Capacities	MVA	2,718.6
Reactive Power Compensation Plan	MVAr	198.0
<b>Mindanao</b>		
Subtransmission Facilities	ckt-km	1,783.4
Distribution Facilities	ckt-km	42,936.5
Substation Capacities	MVA	2,481.5
Reactive Power Compensation Plan	MVAr	2,634.3

Source: 2019-2028 Distribution Development Plan



## **SIGNIFICANT INCIDENTS**

The occurrence of two typhoons resulted to major power outages in several DUs:

- On 15 September 2018, Typhoon Ompong caused damages in the distribution facilities of twenty-two (22) DUs in CAR, Region I, Region II, Province of Aurora, Nueva Ecija and Zambales in Region III, and Province of Laguna and Batangas in Region IV-A. Supply of electricity at the household level in the said affected areas was fully restored on 29 October 2018; and
- On 30 October 2018, Typhoon Rosita caused power outages in thirty-six (36) DUs in CAR, Region I, II, III, IV-A and Province of Camarines Norte in Region V. Power restoration in the household level was completed on 12 December 2018.

**MAJOR POLICIES ISSUED IN 2018 RELATED TO GENERATION,  
TRANSMISSION AND DISTRIBUTION**

**Table 21. List of Department Circular Issued in 2018**

<b>DEPARTMENT CIRCULAR NUMBER</b>	<b>TITLE</b>	<b>DATE OF ISSUANCE</b>	<b>OBJECTIVE</b>
DC2018-01-0002	Adopting Policies for the Effective and Efficient Transition to the Independent Market Operator for the Wholesale Electricity Spot Market	01/17/2018	To issue, adopt and promulgate policies for the efficient transition of Wholesale Electricity Spot Market (WESM) to the Independent Market Operator as embodied in the Electric Power Industry Reform Act (EPIRA) and full attainment of its objective.
DC2018-02-0003	Adopting and Prescribing the Policy for the Competitive Selection Process in the Procurement by the Distribution Utilities of Power Supply Agreement for the Captive Market	02/01/2018	To provide a specific Competitive Selection Process Policy for all Distribution Utilities (DUs) in both grid and off-grid areas in the country defining a clear, transparent and fair supply procurement process that will promote competition and greater private sector participation in the provision of adequate generation capacity to meet the demand in the captive market, and full accountability of the DUs in the provision of affordable electricity prices to their captive market.

DEPARTMENT CIRCULAR NUMBER	TITLE	DATE OF ISSUANCE	OBJECTIVE
DC2018-03-0005	Prescribing the Guidelines Recognizing the Rights of Indigenous Cultural Communities (ICCs) / Indigenous Peoples (IPs) in their Ancestral Domains and Access to the Financial Benefits as Host Communities under the ER 1-94 Program and Rule 29 (A) of the Implementing Rules and Regulations of Republic Act No. 9136, Otherwise Known as, "Electric Power Industry Reform Act of 2001"	02/09/2018	To provide guidelines in recognition of the rights of the ICCs/IPs in their ancestral domains and to access the financial benefits pursuant to Rule 29 (A) of the EPIRA Implementing Rules and Regulations (IRR) and Section 66 of Republic Act No. 9136.
DC2018-04-0007	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manual on Dispatch Protocol for the Implementation of Enhancements to WESM Design and Operations	03/28/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals for the implementation of enhances to WESM design and operations.
DC2018-04-0008	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Market Manuals on Billing and Settlement and Load Forecasting Methodology for the Implementation of Enhancements to WESM Design and Operations	03/28/2018	To adopt, issue and promulgate amendments to Retail Rules and Retail Market Manual on Metering Standards and Procedures for the implementation of enhances to WESM design and operations.
DC2018-04-0009	Adopting Further Amendments to the Retail Rules and its Market Manual on Metering Standards and Procedures for the Implementation of	03/28/2018	To adopt, issue and promulgate amendments to Retail Rules and Retail Market Manual on Metering Standards and Procedures for

DEPARTMENT CIRCULAR NUMBER	TITLE	DATE OF ISSUANCE	OBJECTIVE
	Enhancements to WESM Design and Operations		the implementation of enhances to WESM design and operations.
DC2018-04-0010	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules, Retail Rules and Retail Market Manual on Metering for Clarification on Retail Market Integration	03/28/2018	To adopt, issue and promulgate amendments to WESM Rules, Retail Rules and Retail Market Manual on Metering Standards and Procedures for the implementation of enhances to WESM design and operations.
DC2018-04-0011	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Market Manual on Market Operator Information Disclosure and Confidentiality for the Implementation of Enhancements to WESM Design and Operations	03/28/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals for the implementation of enhances to WESM design and operations.
DC2018-04-0012	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Market Manuals on Price Determination Methodology and Constraint Violation Coefficients and Pricing Re-run for the Implementation of Enhancements to WESM Design and Operations	03/28/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals for the implementation of enhances to WESM design and operations.



DEPARTMENT CIRCULAR NUMBER	TITLE	DATE OF ISSUANCE	OBJECTIVE
DC2018-05-0015	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manuals for the Implementation of enhancements to WESM Design and Operations (Provisions for Metering, Market Trading Node and Scheduling Point)	05/16/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals for the implementation of enhances to WESM design and operations.
DC2018-05-0016	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manual on Dispute Resolution	05/18/2018	To adopt, issue and promulgate amendments to WESM Rules and Dispute Resolution Market Manual for the implementation of enhances to WESM design and operations.
DC2018-06-0017	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manuals (Transitory Provisions for the Implementation of WESM in Mindanao)	06/26/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals for the implementation of enhances to WESM design and operations.
DC2018-07-0018	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manual on Procedures for Changes to the WESM Rules, Retail Rules and Market Manuals	07/02/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals for the implementation of enhances to WESM design and operations.
DC2018-08-0021	Providing for the Amendments to Rule 29 Part (A) of the Implementing Rules and Regulations of Republic Act No. 9136	07/26/2018	To promulgate amendments to Rule 29 (A) of the EPIRA-IRR and other issuances related to the administration of Financial Benefits

DEPARTMENT CIRCULAR NUMBER	TITLE	DATE OF ISSUANCE	OBJECTIVE
			under ER 1-94 program to accelerate socio-economic development and to have a more effective and efficient utilization of the funds and to enforce the immediate provision of benefits to Host communities.
DC2018-08-0022	Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manuals on the Participation of Battery Energy Storage Systems and Pumped-Storage Units in the WESM	08/06/2018	To adopt, issue and promulgate amendments to WESM Rules and Market Manuals specifically to remove the term “energy storage system/s” as a collective term for battery energy storage system and pumped-storage unit/s and minor revisions for consistency.
DC2018-08-0025	Prescribing the Rules Governing the Review and Evaluation of Direct Connection Applications of Industrial, Commercial and Other Electricity End-users	08/24/2018	To adopt and promulgate Rules to govern the orderly, transparent and timely review and evaluation by the Direct Connection Review and Evaluation Committee (D-REC) of the application for direct connection of industrial, commercial and other Electricity End-Users.

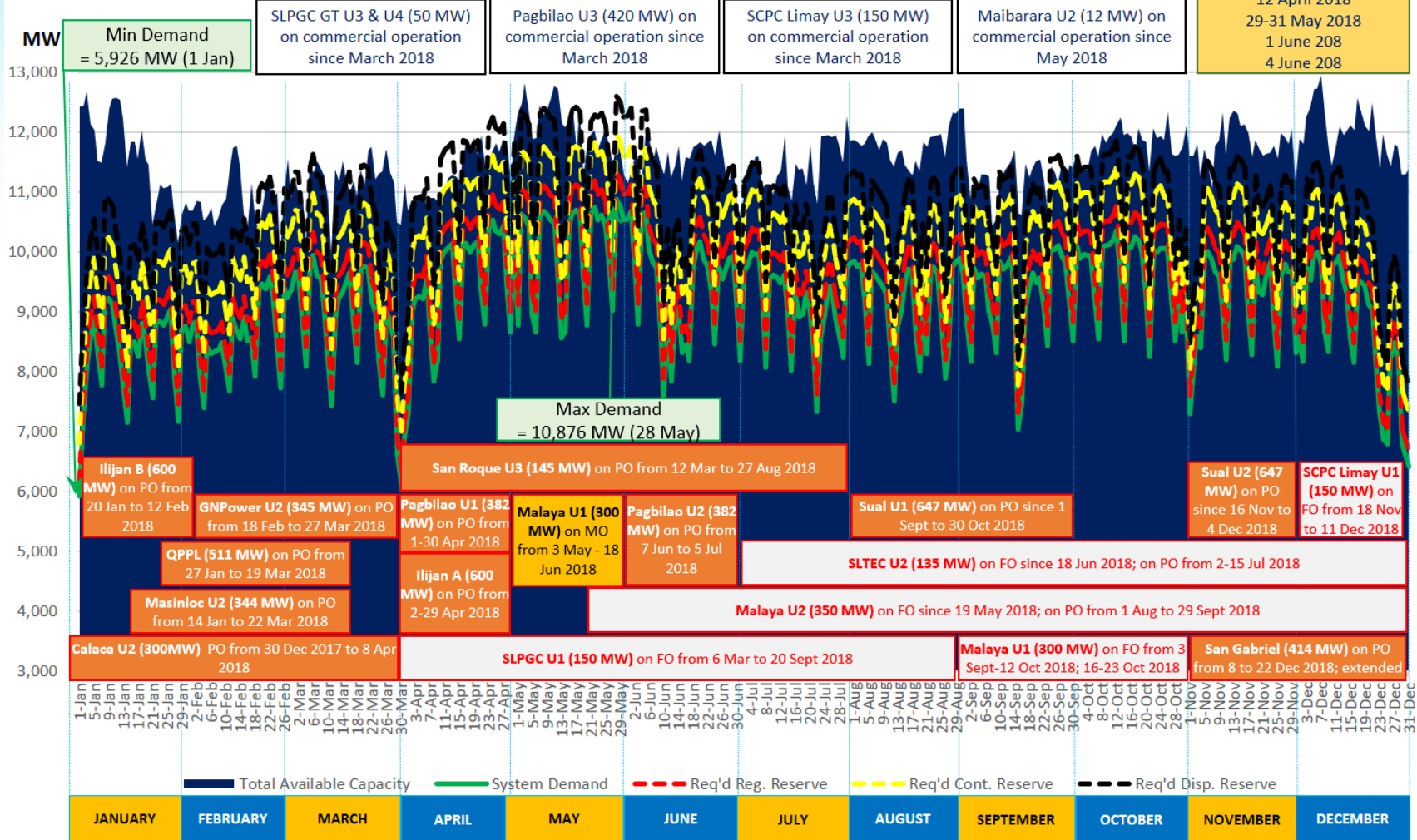
DEPARTMENT CIRCULAR NUMBER	TITLE	DATE OF ISSUANCE	OBJECTIVE
DC2018-09-0026	Adopting Framework for Uniform Monthly Electricity Bill Format	08/24/2018	To issue, adopt and promulgate policy to ensure greater transparency in the billing and charges of the DUs to the Electricity End-Users for the greater protection of public interest.

ANNEX 1

# Luzon Demand-Supply Situation

01 January – 31 December 2018

**Yellow Alert Occurrence:**  
 26 February 2018  
 12 April 2018  
 29-31 May 2018  
 1 June 2018  
 4 June 2018



Source: National Grid Corporation of the Philippines (NGCP) Daily Operations Report



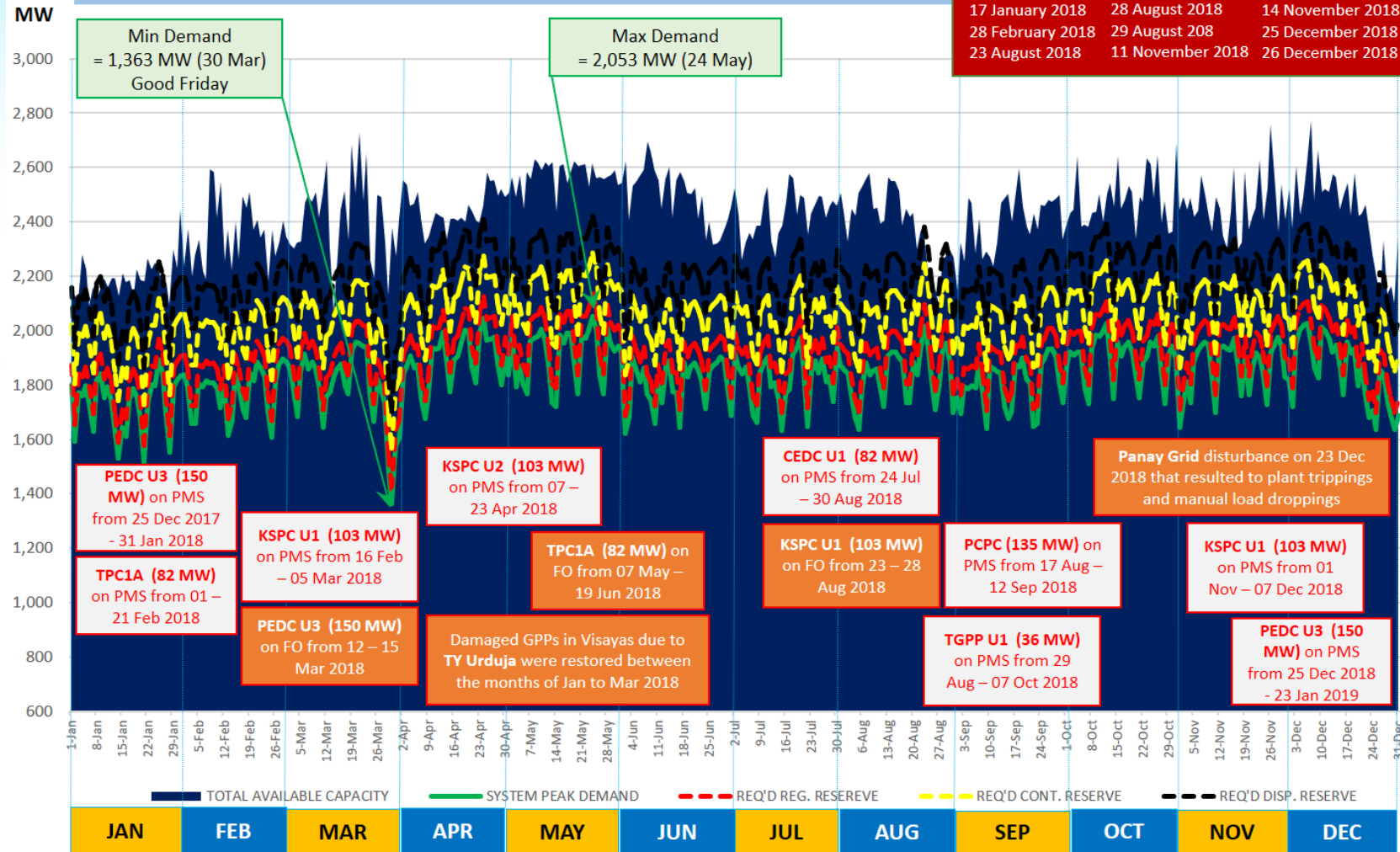
ANNEX 2

# Visayas Demand-Supply Situation

01 January – 31 December 2018

**Red Alert Occurrences:**

10 January 2018	24 August 2018	12 November 2018
11 January 2018	27 August 2018	13 November 2018
17 January 2018	28 August 2018	14 November 2018
28 February 2018	29 August 2018	25 December 2018
23 August 2018	11 November 2018	26 December 2018



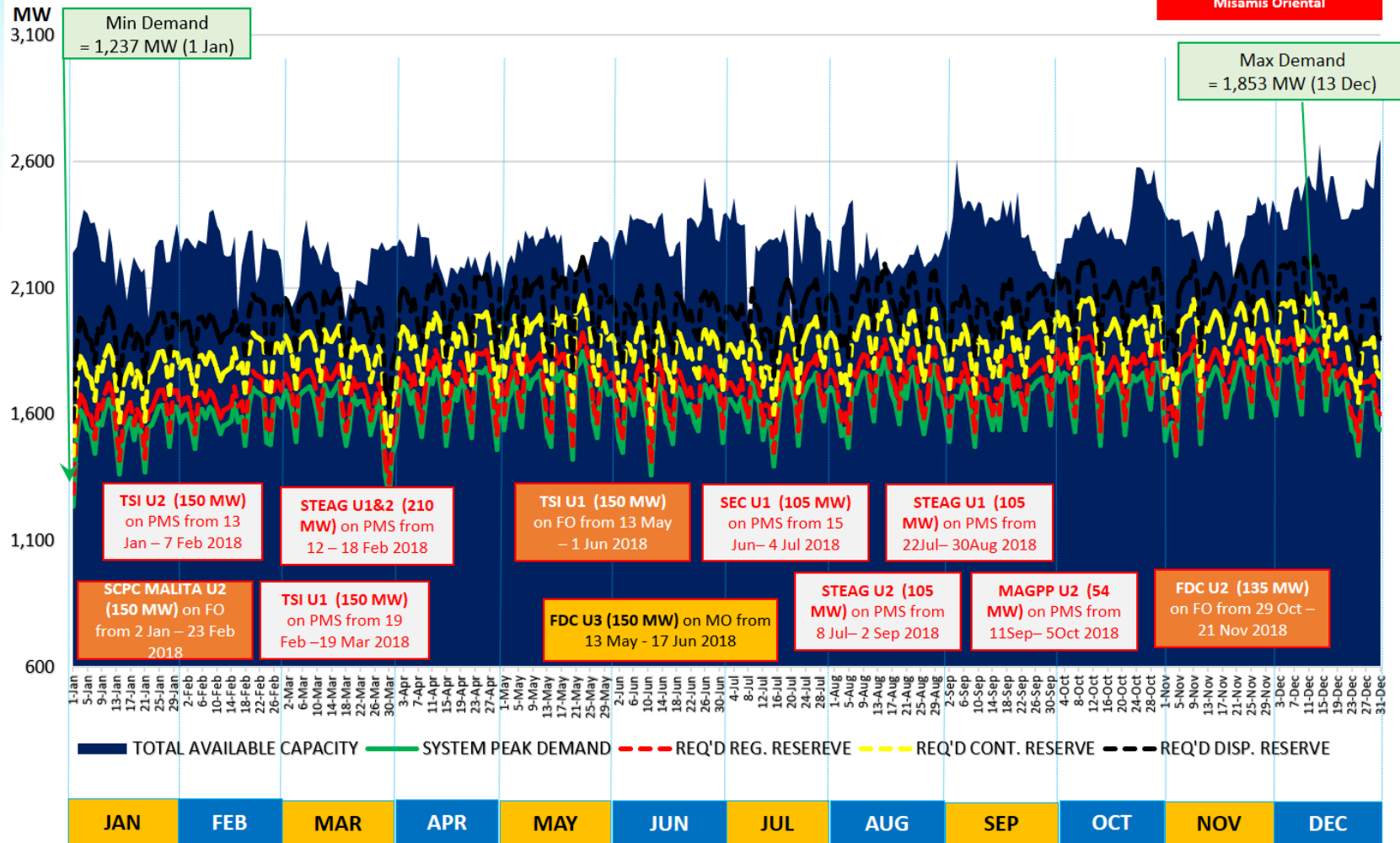
Source: National Grid Corporation of the Philippines (NGCP) Daily Operations Report

ANNEX 3

# Mindanao Demand-Supply Situation

01 January – 31 December 2018

Partial Blackout on 8 Nov 2018 affecting Zamboanga Peninsula, Provinces of Lanao and Portion of Misamis Oriental



Source: National Grid Corporation of the Philippines (NGCP) Daily Operations Report